Mrs. Graf

UNITED STATES DEPARTMENT OF AGRICULTURE
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M O N T H L Y N E W S L E T T E R

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With the approach of a new year I want to again express my appreciation for the devotion to duty and the fine spirit of cooperation manifested by the members of the staff. It gives me pleasure to wish you all a Merry Christmas and a Happy New Year!

John W. Carey

The following papers were prepared by Bureau engineers for the December meeting of the American Society of Agricultural Engineers at Chicago. Research Program of the C.C.C. drainage camps, by L. A. Jones; Supplementary Irrigation in the Humid Region, by F. E. Staebner; Farm Machinery Trends in Europe, and Rural Electrification Trends in Europe, by R. B. Gray; Results of Field Studies of Small Combines, by W.M. Hurst; Testing of Wheels and Lugs, by J. W. Randolph; Testing of Tillage Tools - Equipment and Procedure for Moldboard Plows, by I. F. Reed; Introductory Statement Regarding Farm Storage of Wheat, by Wallace Ashby; Resume of Wheat Storage Study at College Park, Maryland, by M.A.R. Kelley; A Study of the Southern Farm Home in Relation to Comfort, by J. W. Simons and F. B. Lanham; Instruments for Farm Structures Research, by W. V. Hukill; The Wisconsin Farmhouse Comfort Project, by M. J. LaRock; Summary of Results of Wheat Storage Investigations of 1936, by Wallace Ashby, B. M. Stahl, and A. G. Johnson.

During the first week in December a meeting of the District engineer, inspectors, research engineers, and extension specialists engaged on work in connection with the CCC drainage camps was held at the Stevens Hotel, Chicago, to discuss various phases of the work of the camps. Camp programs for the winter months were discussed and instructions were developed for conducting the research program at the camps, which consists principally in determining the value of n for the various sizes of drainage ditches in different conditions of maintenance, and in making run-off measurements. Messrs. DeWeese, Fritz, Torreyson, and Kuhnel are directing the research work in the central states, while Mr. Childs is directing the work in Louisiana and Mr. Ireland in Delaware and Maryland.

At Houma, La., E. Gregson Brown has about completed rebuilding the pumping plant on the project upon which he is conducting investigations relating to the drainage of sugarcane lands.

On the Rio Grande joint investigation for the National Resources Committee, field work on consumptive use of water, under the direction of Harry F. Blaney, was concluded Nov. 30 and the preparation of progress reports covering observations in different parts of the Rio Grande Valley was begun. Paul A. Ewing spent the greater part of the month in the Valley, leaving Albuquerque in company with Mr. Blaney Nov. 25 for Berkeley, stopping at Salt Lake City to confer with Dr. O. W. Israelsen in regard to the report the latter is preparing on past studies of consumptive use of water in Rio Grande Valley. Mapping of the vegetative cover in the San Luis Valley, under the direction of Carl Rohwer was completed,the total area mapped during November being 375,000 acres. Aerial photographs were found to be of great assistance in mapping the irregular fields, cut up by marshes, lakes and streams. Field mapping of New Mexico areas was also completed, and the entire crew of mappers was transferred to the office work preparatory to delineating and tabulating field data, which work will probably be finish in December. It is planned that Messrs Blaney, Ewing, Rohwer and Israelsen will compile the report on the Rio Grande investigation, in the Berkeley office. Fred C. Scobey will remain at Santa Fe until area figures are available for incorporation in the final report.

Preparations for the season's observations of snow cover in connection with the irrigation water supply forecasting project are nearing completion. A conference was held at Salem, Oregon, at which Messrs. Marr, Work and Lewis consulted with State and Weather Bureau officials regarding plans for publishing and otherwise disseminating water supply forecasts and snow cover data for the Columbia River Basin and Oregon Coast drainage. One snow course near the head of the North Fork of Rogue River was located, cleared and marked under the direction of R. A. Work, and soil samples for the determination of moisture content were taken on this course as well as on four other Rogue River courses prior to fall rains.

A paper entitled "The Necessity, Methods, and Results of Water Spreading" was prepared by Dean C. Muckel for presentation at the flood control conference of the Conservation Association of Los Angeles County.

Manuscript for a technical bulletin on "The Growth of Lemon Fruits in Relation to the Moisture Content of the Soil," by Dr. J. R. Furr and Colin A. Taylor, was completed. On November 4, Mr. Taylor gave a talk before the Lemon Men's Club in Los Angeles on the effect of varying intervals between irrigations on growth of lemon fruit. The modifying influence of wetting various portions of the root zone was taken up in the discussion and it was recommended that where tree root distribution was poor the soil might be dried out alternately by using a cover crop in alternate middles. The remaining middles would be kept clean cultivated and well irrigated to avoid stressing the trees while the soil on one side of the trees was being dried out.

A paper entitled "Planning for Water Conservation" was delivered by O. W. Israelsen at the biennial meeting of the Utah Academy of Sciences, Arts, and Letters, at Provo, Utah.

"The Mechanics of Irrigation and Crop Selection" was discussed in a paper prepared by Leslie Bowen for presentation at the annual meeting of the Nebraska State Irrigation Association.

Studies of rate of capillary flow of moisture in soil are being continued by M. R. Lewis, three W.P.A. assistants having been furnished for this project. Tests are being made on 72 cores of Chehalis loam soil.

The work being done this year is designed to bring out the fundamental relation between the rate at which the moisture content of the soil changes from point to point and the capillary force which tends to move moisture from wet soil to dry soil. It is hoped to do this by making comparisons between the gravitational force drawing water downward through soil cores and capillary forces moving moisture through the same or similar soil cores of varying moisture content.

R. B. Gray, R. M. Merrill, J. W. Randolph, E. D. Gordon, I. F. Reed, C. K. Shedd, and O. K. Hedden attended the Power and Machinery Division meeting of the A.S.A.E. in Chicago. In addition to the papers listed elsewhere, Mr. Merrill discussed a paper on insect control and showed a movie covering the use of the vapor spray method.

The return trip of Messrs Randolph, Gordan and Reed was routed so as to contact manufacturers of farm machinery in Chicago and Moline, Ill. and to confer with agricultural engineers at Iowa State College and the University of Missouri. A motion picture of the Farm Tillage Machinery Laboratory was shown to representative groups at each of the machinery companies visited and to the agricultural engineers and agronomists at the University of Missouri. It was found that every one contacted was very much interested in the work at the laboratory and in the wheel study contemplated.

While in Chicago Mr. Gray contacted manufacturers representatives relative to information on the History of Tractor Development now under consideration by the Division of Mechanical Equipment. Mr. Gray also attended a session of the Farm Equipment Institute wherein the question of the proposed rubber-tire tests were discussed. The Institute felt that this work should be conducted at Auburn, Ala., which sentiment was also voiced in resolutions presented by the A.S.A.E. and S.A.E.

Plans for developing equipment for studying the characteristics of wheels of all types for traction and rolling resistance are now under way at the Farm Tillage Machinery Laboratory. In this connection Mr. Randolph observed the traction studies being conducted by the S.A.E. Tractor-Tire Testing Committee at Phoenix, Arizona, December 14 to 19.

The personnel of the Bureau Fertilizer Machinery Project consisting of G. A. Cumings, W. H. Redit, L.G. Schoenleber and D. B. Eldredge, attended the annual meeting of the National Joint Committee on Fertilizer Application in Washington, D. C., Nov. 17. Reports on the fertilizer placement studies with cotton were presented by Messrs. Cumings and Redit. Increased interest in methods of fertilizer application was apparent from the large attendance, which was double that of any previous meetings. Fertilizer placement experiments with 16 crops were in progress during the past season at 68 locations in 16 states.

S. W. McBirney attended the annual Northern California Sugar Beet Conference in San Francisco on November 28 and the Southern California Sugar Beet Conference at Oxnard on December 5. These two conferences are made up of members of the beet sugar industry and others doing experimental work with sugar beets or dealing with growers in an advisory capacity. Mr. McBirney gave an informal talk at the Oxnard meeting on the experimental work on the sugar beet production machinery project. Because of the labor situation those in the beet sugar industry are more interested in field machinery than ever before.

E. M. Dieffenbach has submitted to the Washington office a set of instructions for constructing a reading machine for viewing 35 mm. films. The cost of the materials for one machine, including the lenses, is under $20.

The meetings of the Structures Division of the A.S.A.E. at Chicago Nov. 30-Dec. 1, were attended by Wallace Ashby, W. V. Hukill, C. F. Kelly Thayer Cleaver, Max J. LaRock, of this Bureau. Mr. Ashby led the symposium on Farm Storage of Grain, at which reports from each of the four field stations - in Kansas, Illinois, North Dakota, and Maryland - were presented. A general summary of the project by B. M. Stahl and W.B.Combs of the Bureau of Agricultural Economics and Dr. A. E. Johnson of the Bureau of Plant Industry was also given.

The purpose of these investigations was to learn what types of storage structures would best preserve and improve the quality of wheat stored on the farm, and what grades of wheat could be safely stored for long periods. There were over 200 lots of grain under observation in all types of storage structures, ranging from a few to over 1,000 bushels each.

A total of 125 farm bins were studied in which records were kept of the temperature by means of thermocouples, the grain being sampled at the time it was placed in the bins and again in the late fall. At four of the college stations various methods of ventilation were studied.

According to the data obtained it is apparent that wheat of over 15 percent moisture content is unsafe for storage, except possibly under very favorable conditions. The critical moisture content, below which wheat will keep safely in farm bins, has not been determined but is probably well below 15 percent. It is influenced by the maturity of the grain. Other important factors affecting keeping quality are the construction and ventilation of the bin, its exposure to sunshine and wind, and the temperature and humidity of the air. Little difference between bins constructed of various materials was found in the tests this year but bins ventilated by perforated bottoms or by means of horizontal flues covered with fly screen kept the wheat in better condition than did unventilated bins. However, these results need to be confirmed by experiments under more normal weather conditions.

A. H. Senner attended the annual meeting of the American Society of Mechanical Engineers at New York, where he presented a paper on "Domestic Oil Burners". on November 30.

Publications issued:

Annual report of the Bureau, 1936.
Oil Burners for Home Heating. Circ. 406, by A. H. Senner.
Equipment for Applying Dust Fungicides. Circ. 415, by W. M. Hurst, F. D. Fulton, W. R. Humphries, and R. W. Leukel.
Combine Harvesting. Farmers' Bulletin 1761. By W. M. Hurst and W. R. Humphries.